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AUTHOR	Holliday, L. P.
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ABSTRACT

To examine selected manpower programs in the Los Angeles area, the Rand Corporation devised theoretical and empirical methods of analysis. The four different types of empirical studies which were made were a survey of employers, former youth-project enrollees, interaction between staff and enrollees, and a cost analysis of manpower projects. The theoretical models dealt with training and unemployment. The report also surveyed the various methods of program evaluations and concluded that more than one program should be evaluated simultaneously. Six different manpower program systems were examined but only "extension Zero" yielded reliable and unbiased data. For this system, a computer clerk took information over the telephone and filled out a computer card. For later reference, the computer provided such data as population trends of the project and job placement. The report also included suggestions for two demonstration projects. A table of summary unit costs of manpower programs is appended. (BC)

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MEMORANDUM
RM-5746-OEO
MAY 1969

APPRAISING SELECTED MANPOWER TRAINING PROGRAMS IN THE LOS ANGELES AREA

L. P. Holliday

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This study is presented as a competent treatment of the subject, worthy of publication. The Rand Corporation vouches for the quality of the research, without necessarily endorsing the opinions and conclusions of the authors.

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PREFACE

Under the terms of Contract OEO-4191 with the Office of Economic Opportunity, RAND has applied techniques of systems analysis to manpower programs of interest to OEO with a view toward (a) developing a rational, comprehensive basis for evaluating ongoing and proposed programs and (b) providing guidance for the design of future programs.

This RAND Memorandum is one of several submitted to OEO in fulfillment of the terms of the contract:

RM-5739-OEO, An Analysis of Poverty: A Suggested Methodology, by J.J. McCall, October 1968

RM-5740-OEO, Employers and Manpower Training Programs: Data Collection and Analysis, by D.H. Greenberg, October 1968

RM-5741-OEO, Manpower Programs as Markov Chains, by E.B. Durbin, October 1968

RM-5744-OEO, An Analysis of East Los Angeles YTEP Follow-up Data, by P.O. Katsky (to be published)

RM-5745-OEO, Economics of Information and Job Search, by J.J. McCall, November 1968

It draws together in one place the principal theoretical and empirical findings of the work in the Los Angeles area, and sets forth suggestions and recommendations for the design of future manpower programs.

RAND is continuing its research for OEO in four areas: (1) further refinement of models of the incidence, persistence, and control of poverty; (2) use of data from the Survey of Economic Opportunity (conducted by the Bureau of the Census for OEO) to analyze the determinants of labor supply; (3) formulation of a research strategy for the study of the labor market problems of low-income youth in urban areas; and (4) analysis of current manpower evaluation efforts.

SUMMARY

In 1968 RAND conducted a study for the Office of Economic Opportunity with the objective of developing methods of evaluating manpower training programs. This was an interdisciplinary effort involving economists, sociologists, psychologists, operations research specialists, mathematicians, and engineers.

Early in the study, having discovered that adequate data were lacking for evaluating the success of manpower programs, we set up our own "neighborhood research teams" using local people to interview former Youth Training and Employment Project enrollees in East and South Central Los Angeles. We also followed up with employers to compare the work histories of program graduates with those of similar employees who had not been through a manpower program.

In a more theoretical vein, mathematical models were developed for simulating the flow of enrollees through the various phases of a manpower program (as a convenient quantitative description of differences in program operations). Other models simulated the flow of people in and out of the poverty category as a function of local economic conditions, policy variables (the mix of manpower programs and other programs, such as income maintenance), and population characteristics. A sociologist recorded counseling and classroom sessions and analyzed them from the standpoint of human interactions. Studies were also made of the various manpower data systems, of various other evaluative activities, and of the role and needs of the federal government in evaluation.

Our data-gathering efforts were experimental; in fact, an important part of our work was exploration, experimenting with alternative techniques for seeking evaluative information. Although we did not attempt to design and test a management information system, we recognized the need for such a system to be computer-based and to provide data needed for evaluation. We have proposed a longitudinal study to further the development of evaluation and information systems.

In this overview report, the principal theoretical and empirical findings are discussed, and recommendations are made for the design of future manpower programs. The recommendations include some for specific and immediate action, and some of a general kind:

- Conduct a longitudinal study (including developing proximate measure of program outcome)
- Seek low-cost sources of follow-up data for evaluation
- Consider computer-based information systems
- Focus job development on promising firms
- Develop standards for cost-benefit studies
- Examine youth program goals
- Make a pilot study of program images
- Understand the decision supported by an evaluation
- Recognize the limitations of data currently available
- Make more use of multivariate analysis
- Study the control group problem
- Distinguish between program effects and population effects
- Establish a procedure for program development

Suggestions are made, in addition, for two demonstration projects: a computer-based data system, and an experimental manpower project.

Some details on these recommendations may be found in Section V.

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Outside RAND, we are especially indebted to the East Los Angeles Youth Training and Employment Project (YTEP) staff, particularly Donald R. Clarke; the Community Service Organization of East Los Angeles; the Economic and Youth Opportunities Agency; the South Central Los Angeles YTEP and Opportunities Industrialization Center; the sixteen local firms that cooperated in our employer survey; and the more than thirty interviewers who worked for us in East and South Central Los Angeles.

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I. INTRODUCTION

Emphasis in this study was placed on the problems of devising a methodology for evaluating manpower programs, although there was some experimentation with data collection and some quantitative results were obtained. Manpower programs,* of course, are but one form of intervention in the problems of poverty; other forms include creating jobs, maintaining income, reducing labor-market information costs, and enforcing equal-opportunity laws. Some of these -- for example, the comparison of training with income maintenance -- are dealt with in our models. The problems of poverty, in turn, are intimately linked with the entire range of issues that constitute the present urban crisis. The links between poverty, inequity, alienation, delinquency, and public order are not well understood.

We found in the course of the study that, in spite of some new data systems, existing data were inadequate for analysis and we were obliged to collect our own. Data-collection efforts associated with the study were viewed as experimental and were limited to the Los Angeles area. Direct contacts with former manpower-program enrollees were limited to a single youth project, although the histories of some former enrollees in several other projects were constructed from employer records. Since this empirical work was intended to be illustrative only, the quantitative results in the resulting reports should <u>not</u> be used as a basis for program decisions.

The issues relating to manpower programs can be arranged in accordance with their effective period, as follows:

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*A "manpower program" can be defined as a program designed to provide one or more of the following services to enrollees (current, potential, or former): recruitment, counseling, basic skills training, vocational training, job placement, and follow-up after placement. The word "project" is used to describe a specific activity (which may include all of the above services, or "treatments") and "program" to describe a set of similar activities.

Long-range Issues Relating to Program Design:

On-the-job vs. institutional training
Job creation vs. training *per se*
Motivation vs. skill training
General vs. skill training
Creaming vs. non-creaming*
Residential vs. non-residential
Community vs. government sponsorship

Long-range Issues Relating to Target Population:

Adult vs. youth
Urban vs. rural
Male vs. female
Racial/ethnic group

Some Short-range Issues:

Which projects to fund?
What services to provide?
What sponsors to use?
Where to apply technical assistance?

Some of these issues are obviously choices between two alternatives; others involve choosing from a range of possibilities. The short-range issues are examples of decisions that are likely to be made during each annual budget cycle.

During the first year of RAND work for the Office of Economic Opportunity, we could touch on only a few of these issues. For example, Greenberg's follow-up with employers produced data on former enrollees in both on-the-job training and institutional training

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*"Creaming" is a term used in poverty programs to denote intentional or unintentional bias toward the better-qualified members of a target population -- for example, in enrollment in a training project.

projects.* Katsky's analysis of the youth project data placed particular emphasis on differential results for males and females.**

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*D. H. Greenberg, Employers and Manpower Training Programs: Data Collection and Analysis, RM-5740-OEO, October 1968.

**P. O. Katsky, An Analysis of East Los Angeles YTEP Follow-up Data, RM-5744-OEO (to be published).

II. EMPIRICAL WORK

This section covers four empirical approaches to the evaluation of manpower projects: (1) an employer survey, (2) a survey of former youth-project enrollees, (3) sociological observations on counseling and classroom interactions, and (4) a project cost analysis based on studies of records and interviews with staff personnel.

AN EMPLOYER SURVEY*

Greenberg experimented with the use of personnel records at firms that had hired former manpower-project trainees, to determine whether they could be used as a basis for comparing projects. He examined the work records of 289 former trainees in sixteen firms from four separate manpower projects, including two comprehensive youth projects,** the Opportunities Industrialization Center, and several on-the-job training projects conducted under the Manpower Development and Training Act.

Six criteria of effectiveness were used in analyzing the survey data: (1) duration of employment with the employer whose records were being examined, (2) duration of employment, weighted by the reasons for termination, (3) most recent salary, (4) salary increase while with the employer, (5) rate of salary increase, and (6) total wages earned while employed.

Reasons for termination were used to weight the duration of employment as a way of compensating for the fact that the survey covered only the first job experience after training. The duration of employment was <u>increased</u> by a weighting factor if the employee left for positive reasons, such as returning to school or taking a better job, and <u>decreased</u> if he left for negative reasons, such as being fired or simply quitting with no other job opportunity in sight.

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* See Greenberg, RM-5740-OEO.

** The Youth Training Employment Projects in South Central Los Angeles (predominantly negro) and East Los Angeles (predominantly Mexican-American).

In comparing projects, it is, of course, important to control for differences in the characteristics of project populations. Using data from employer records, Greenberg was able to control for such variables as age, sex, education, previous work experience, marital status, number of convictions reported by the employee, and race. Prior work experience was defined as the proportion of time since high school spent working or training, not counting the present job or the training project under study. The objective was to detect significant differences in the effectiveness of the four projects under consideration. The results indicated that the impact of the surveyed firm's policies and environment on the employee's work experience should also be examined.

Using regression-analysis techniques, Greenberg concluded that none of the four training projects showed a consistent superiority by all criteria. This conclusion should be qualified in at least two ways. First, the study examined only trainees who had been placed by the projects; some trainees may have found their own jobs. Second, as noted, it does not examine work experience beyond the first job held after leaving the project. Assuming that the conclusion is valid, what does it imply? For one thing, that if it is true the projects do not have a differential effect on the individual's success on the job, placement rate may be a good proxy for project performance.*

Greenberg also concluded that the trainees placed with certain groups of firms tended to do better than those placed with other groups. In this particular sample of firms, the best performers were the large, highly unionized government contractors -- in the Los Angeles area, the aerospace firms. The worst performers were the retail and service establishments, and the small nonunionized manufacturers of nondurables. This conclusion should be qualified by the fact that the sample of firms was small and nonrandom; firms were chosen that had hired eight or more terminees from a given project.

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* However, if project staff personnel discover that they are being evaluated in terms of placement rates, they may find ways to inflate the rates in order to look better than they really are.

Also, it is obvious that individuals placed with high-wage or low-turnover firms tend to do better than those placed with other types of firms.

Finally, Greenberg concluded that trainees do not as a rule perform differently from other individuals hired at the same time. This conclusion may be vitiated somewhat by the lack of information to permit adequate control for differences between trainee and non-trainee populations, especially for differences prior to the training experience. If we assume that the trainee population was originally less qualified than the nontrainee population, then these results are encouraging in that they indicate that the training allowed both groups to do equally well.

The low cost of the employer-survey method of collecting follow-up data -- less than $3.00 per subject in this case -- makes it a potentially attractive means of evaluating project outcome, especially if some of the limitations noted can be overcome.

A SURVEY OF FORMER YOUTH-PROJECT ENROLLEES*

The second empirical approach was a study of a comprehensive Youth Training and Employment Project in East Los Angeles (the ELA-YTEP). This program provides a variety of services, including counseling, Neighborhood Youth Corps (NYC) work opportunities, prevocational training, placement in vocational programs, and testing. The study group surveyed 239 youths using a neighborhood research team. It was a retrospective survey conducted by persons actually living in and familiar with the area, and focused on several important issues. First, the group hoped to compare the benefits and the costs of this particular program and make a judgment as to its worth as an investment in human capital. Second, they hoped to determine, if possible, the effects and relative importance of the various project services noted above. In addition, they hoped to examine the impact of various

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* See Katsky, RM-5744-OEO.

aspects of family background upon the work experience of youths who had been in the program. Six measures of program success, all of them related to the work experience of the youths in the program, were agreed upon. They are as follows:

1. The proportion of the time worked subsequent to program experience.
2. The proportion of the time worked subsequent to program experience minus the proportion of time worked during the six months prior to program experience.
3. Wages subsequent to program experience.
4. Average wages subsequent to program experience minus average wages during the six months prior to program experience.
5. Estimated annual income subsequent to program experience.*
6. Estimated annual income subsequent to program experience minus estimated annual income prior to program experience.

There were reservations in the minds of the study group about the appropriateness of these measures as unique expressions of project outcome for youth projects. There appear to be substantial reasons why youths simply cannot be expected to do as well in the urban labor market as other elements of the population. They are prohibited by law, for example, from working at certain tasks. Teenage years seem to be a time of choice in the period generally prior to assumption of family responsibilities. Consequently, it may be inappropriate to attempt to measure the success or failure of a project by the work experiences of youths in the 10 months or so subsequent to program or project experience. RAND is currently developing a research strategy for studying the problems of youths in urban labor markets for the Office of Economic Opportunity.** It is hoped that one output of the study will be suggestions for alternative measures of program outcomes.

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* Computed by multiplying average wages after YTEP by the proportion of time worked since YTEP. Same procedure for income before YTEP.

** S. J. Carroll and A. H. Pascal, "Youth and Work: Toward a Model of Lifetime Economic Prospects," RM-5891-OEO (forthcoming).

In attempting to determine the impact of a program, it is necessary to control for a variety of characteristics in the population. For example, a project that helps a 16-year-old to work full-time is probably accomplishing more than one that helps a 20-year-old to work full-time. The natural maturation process is such that the probability of any given individual's working full-time increases as his age increases, at least through the teenage years. The study group members were able to control for a large variety of personal and family characteristics, because they collected the data themselves. They controlled for such personal characteristics as age, sex, education, and self-reported police contacts; also, for such family characteristics as the migration history in the family, the family income, the number of individuals in the home, and the number of individuals in the home who were working. The impact of parental education and family structure was examined, whether or not the individual was the product of a broken home. The study group also examined the prior work history of the individual particularly in the six months prior to his enrollment in the program, and for the length of time subsequent to the program that he was exposed to labor markets. Several measures of program experience were used, including the individual's length of stay in the program, whether or not he participated in the Neighborhood Youth Corps, whether or not he received counseling, and whether or not he felt, in retrospect, that the program was useful. Regression analysis was used to separate the effect of personal and family background characteristics from effects that might be attributed to the program experience. An attempt was made to use as a control or reference group some individuals -- making up approximately 20 percent of the sample -- who had been in the program for less than a full week. This group stayed for less than two days on the average, and it was initially felt that the members would have received little benefit from the program. However, after controlling for the effects of demographic and family characteristics, the control group did better than program enrollees.

This last conclusion, that the control group out-performed the program enrollees, led the investigation to examine more carefully the

assumptions associated with the use of this type of individual as a control. They now feel that an individual who came into the program and left after only a short time may well have been more highly motivated than those who stayed, and that he may have received useful types of services from the program even in a day or two. For example, he may have used counseling or job-placement services. There is reason to believe that self-selection processes are at work here, and that individuals who enter a program may differ significantly from those who choose not to enter it. The argument is that persons who choose not to enter may have decided that they do not need the services provided, that they are ready for work, and may go out to find a better job. In other words, they may be more highly motivated than those joining the program.

But even if the "no-shows" did significantly worse than the enrollees, we would be reluctant to conclude that the program had positive effects. It may be that those who choose not to enter, or do not carry on with, the program are the least motivated, do not wish further educational experiences, or are not willing to invest time in further training. One would therefore expect that no-shows would have a biomodal distribution with respect to motivation, being divided between the most motivated and the least motivated. The middle group, then, would enter the program. Until the capacity exists to differentiate individuals on the basis of their motivation, or characteristics that are unmeasured in our study, no-shows cannot properly be used as a control.

The conclusion that family-background variables do have a significant effect upon work experience should not come as a great surprise. This is similar to the conclusion reached by Coleman in his study of the equality of educational opportunity, and by Astin in his study of the impact of institutional quality upon undergraduate achievement.*

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* James S. Coleman et al., Equality of Educational Opportunity, Washington, D.C., 1966; Alexander W. Astin, "Undergraduate Achievement and Institutional Excellence," Science, 161:3842 (August 16, 1968), pp. 661-668.

The work histories of enrollees in a project, a school, or a university depend more upon the characteristics of the enrollee's background than upon the qualities of the institution or of the program itself.

Another objective of this analysis was to determine whether particular aspects of this comprehensive project* seemed more valuable than others -- whether counseling, for example, seemed to be related to the success of the individual after the program experience. On the basis of the preliminary analysis performed, it was concluded that the program variables used do not explain program outcome, and that persons who stay longer in the program seem to do less well after they leave it.

There are three important qualifications. First, the analyses are preliminary and tentative. Neither time nor resources permitted the exploration in detail of relationships between the program and variables in the program outcome. A significant limitation is the fact that the researchers were unable to use data obtained from program records (as distinguished from the interviews conducted) to describe adequately the services received in the program. The program variables used, as a result, are very crude. For example, counseling was counted as a single event, regardless of whether the individual received twenty hours, or one hour, of attention. Finally, there is likely to be a high correlation between the treatment an individual receives and his personal characteristics. If the program is functioning properly, individuals who need remedial education will receive it. Because of this, it is difficult to separate the effect on work experience of treatment (remedial education course) and personal characteristics (a need for remedial education). Because of difficulties in measuring personal characteristics such as reading and math skills -- in this case, such measures were absent -- it may be that an individual's receiving a service such as remedial education is a better indication of personal deficiency than the crude measures

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* A "comprehensive" manpower project is one that offers all, or most, of the following services: recruitment, intake, prevocational and vocational training, counseling, placement, and follow-up.

of personal characteristics available to the study group. Consequently, a negative relationship between work experience and the fact that an individual receives a particular type of service may imply that people requiring such services do less well in general, not that the services are useless. This is an analytical problem that will exist wherever natural experiments are used to make this type of analysis.

One major methodological conclusion concerning the conduct of evaluation is that high-confidence analysis of the relative values of different treatments will require more controlled experimentation. A notable example of a controlled experiment is the work training program of Mobilization for Youth;* their experiences merit closer examination. The type of analysis performed in the present survey with regard to the differential effects of program treatments should not be carried further without investigation of the potentially high correlation between personal qualities and treatment.

A second major methodological conclusion is that family-background variables ought to be included in evaluations to control for population differences between projects. A final observation is that the data collected in the survey, even though they cannot be used to determine the absolute benefits of the program because of the absence of a suitable control group, could be used in cost-effectiveness comparisons between similar types of programs. For example, one may not be able to say that a project resulted in benefits twice the size of project costs, but one may be able to say that a project costing (say) $700 per individual led to an employment rate that was significantly higher or lower than that resulting from another project costing a similar amount of money, controlling for differences in the personal characteristics of program participants.

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*See Mobilization for Youth, Inc., Division of Employment Opportunities, Eight Month Report to the Office of Manpower Policy, Evaluation and Research, December 16, 1965-August 15, 1966, Section XI.

INTERACTIONS BETWEEN STAFF AND ENROLLEES

David Sudnow of the project group obtained tape recordings of several classes and counseling sessions at manpower projects in the Los Angeles area. Analysis of these interactional materials indicated, in Sudnow's opinion, that a preferred orientation of manpower projects would be to provide widespread knowledge of job opportunities, requisite social and physical job skills, and widespread motivational stimulation. Thus,oriented, a project should gain access to a much more extensive population than the one it serves directly, using the normal community network of socialization. The goal would be for trainees to transmit their knowledge and to help develop a basic motivational orientation toward career-oriented work as a central cultural value.

The counseling sessions and classes studied by Sudnow appeared to bemmore than ways of giving advice; they also served to lock the trainee into an institutional scene, so as to achieve some initial commitment to the training program as a possible means of finding a job. In Sudnow's view, these interactional features of the class should be emphasized rather than the value of objective advice.

Sudnow found that some counselers, in teaching the etiquette of job seeking, go straight to the technical problem of "oneupmanship," a skill that is familiar to more sophisticated applicants and one that can be fairly readily learned. The job interview is portrayed as fun. Trainees are made to become involved psychodramatically, through mock interviews and problem situations. By this approach, trainees maintain face with their peers, get through the session, handle their part, show motivation, and keep their "cool."

COST ANALYSIS OF MANPOWER PROJECTS

Peary C. Owens and Ray A. Soderberg performed a sample cost analysis dealing with the following activities in East Los Angeles: the training and job-placement activities of the Youth Training and Employment Project (YTEP), the On-the-Job Training Program (OJT), the East Los Angeles Neighborhood Youth Corps (NYC-ELA), the Neighborhood

Youth Corps component of the Concentrated Employment Program (NYC-CEP), and the Job Corps. These activities were in a preponderantly (88 percent) Mexican-American community.

Unit cost estimates resulting from this analysis are given in the Appendix.

III. THEORETICAL WORK

Several theoretical models dealing with training and unemployment were developed during the course of the study.

McCall designed two elementary models of the incidence, persistence, and control of poverty -- one descriptive, the other normative.* The descriptive model, which is basically probabilistic, uses the theory of Markov processes to describe movements into and out of poverty. The primary goal of this model is to choose a combination of control variables which yields the most desirable transition matrix. The two policy variables considered are expenditures on training and on income maintenance. With a fixed budget for the alleviation of poverty, the object is to so allocate funds between the two variables as to minimize the proportion of people in poverty in the long run. Several other criteria were investigated by McCall, and the methods for achieving optimal allocations are outlined. It allows the investigation of several important hypotheses regarding the behavior of such movements; these hypotheses can be tested using longitudinal data collected by the Social Security Administration. Some of the more important hypotheses are (1) the adequacy of a Markovian model in describing income mobility; (2) differences in the transition rates between men and women of the same age, and between negroes and caucasians of the same age; and (3) the effect of the business cycle on income mobility, and its differential effect on negroes and caucasians.

McCall used the theory of optimal stopping rules to analyze the unemployment phenomenon.** The analysis was made at the individual level for prospective employees, although similar methods could have been applied to the behavior of employers' job markets. In labor markets characterized by uncertainty and costly information, a

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* J. J. McCall, An Analysis of Poverty: A Suggested Methodology, RM-5739-OEO, October 1968.

** J. J. McCall, Economics of Information and Job Search, RM-5745-OEO, November 1968.

significant amount of observed unemployment entails searching activities on the part of potential employees. An optimal search policy is obtained for a very simple model of this process. The searcher is assumed to know the distribution of wages for his particular skills; the cost of search is a known constant. Job offers arrive periodically and the searcher accepts or rejects them as they occur. The individual continues to search and remains unemployed as long as offers as less than some critical value. Whenever an offer exceeds this critical value, it is accepted and employment commences. The expected length of unemployment is calculated when the individual follows this optimal policy. The distinction between those who drop out of the labor market -- the "discouraged workers" -- and those who continue to search is easily interpreted within this framework. The effects of a minimum wage on these two groups are also discussed.

A more general model of unemployment which includes discounting and the length of employment is also presented, and an adaptive search policy is outlined.

Durbin, in developing his model, used Markov chains to describe manpower projects as flow processes.* Markov chains are much used as descriptive models in economics and the other social sciences. As elements of prediction and control systems, Markov chains are simple yet satisfactory approximations of dynamic, probabilistic systems.

For example, various manpower training programs in the War on Poverty may have the same program name and the same organizational structure, and yet be very different in operation and effectiveness. Part of the task of identifying sources of differences in effectiveness is simply systematically describing and identifying differences between programs. In describing the dynamics of a manpower program by a Markov chain, Durbin assumes that the program can be defined by a finite number of discrete characterizations, or states. The state in which any single person resides in the program, over time, will

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*E. P. Durbin, Manpower Programs as Markov Chains, RM-5741-OEO, October 1968.

change. The Markov assumption is that the person's future movement depends only on his present state, not on his past movement. An alternative view of the process is obtained by noting that of the total number of people in a given state in a given period, some proportion moves to each of the program states. The Markov assumption is that the total number of people in each state during the next period depends only on the numbers currently in each state, not on the numbers previously in each state.

Manpower training programs typically consist of a finite number of progression levels and outcomes that can serve as the state descriptors. As an example, these might be (1) no service, (2) intake, (3) counseling only, (4) in-training, and (5) employment. While the movement of people from one category to another occurs continually, we may look at a program only, say, once each month and determine for each state the proportion of people who during the past month have moved to another state. By computing the numerical transition rates between categories in programs, significant interprogram differences and similarities can be made to stand out, for the purpose of detecting factors that lead to desirable program results. Suppose, for example, that a certain program has a significantly lower rate of movement from counseling into employment and a higher job retention rate than another program. One might decide to explore the connection between counseling preparation for employment and job retention. From the programs' internal transition rates, other useful comparative information can be generated.

Data suitable for such descriptions are currently in short supply, for several reasons:

- Unfamiliarity of program administrators and evaluators with statistical projection concepts.
- Lack of funding and apparent lack of interest in development and operation of management information systems that provide internal transition information.
- Bias of prior information-system requirement studies toward aggregated resource information for accounting

purposes, and toward ultimate client placement information as a function of client characteristics.

Internal data systems exist that can routinely generate the proper type of information for estimating internal transition rates.* Where such data systems do not exist, staff estimates of the relevant transition rates can serve as approximate comparative data.

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* For example, the experimental "Extension Zero" system at the East Los Angeles YTEP. See Section IV, below.

IV. STUDIES OF EVALUATION

EVALUATION EFFORTS: PRESENT AND FUTURE

Concepts for the evaluation of training programs are fairly well developed, but the realities of scarce data have had a limiting effect. Lifetime earnings, for example, cannot be measured in anything less than the lifetime of the individual.

Various types of evaluations have been made, including, first, surveys of program terminees for program directors -- such as the Dunlop surveys of the Neighborhood Youth Corps and the Harris surveys of Job Corps terminees. Although large quantities of data have been collected by surveys of terminees, there is a tendency to use them descriptively rather than analytically. (This tendency is changing, however, as noted below.) A second type of evaluation is the narrative historical survey, where an expert observer attempts to conflate various survey data, personal impressions, and the results of more specialized evaluations into a single, coherent narrative account.

A third type is the qualitative, short-term evaluation -- by a contractor or by in-house personnel -- describing the way in which a program is running, its enrollees, its staff, and the services it provides. This type of evaluation is important in the early stages of program implementation, because it provides rapid feedback on problems requiring technical assistance.

Fourth, there is a rather heterogeneous class of analytical studies that attempt to use raw data from the first three types of studies to produce more refined estimates of program value relative to program cost. Examples of these are the studies of West Virginia projects by Gerald Sommers* and the studies of Connecticut projects

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*Gerald Sommers (ed.), Retraining the Unemployed (Madison: University of Wisconsin Press, 1968), esp. Chap. II.

by Michael Borus.* These studies tend to be limited to a small number of training projects. One such study compares two different types of programs: on-the-job training and institutional components of the Manpower Development and Training Act Program. This study, by Planning Research Corporation under the sponsorship of the Department of Labor, is unique in that it not only examines two different programs simultaneously but also attempts to compute benefits to society as well as to individuals in the programs. Perhaps the most elegant type of evaluation is that associated with social experiments, such as those carried out by Mobilization for Youth in New York. The sophisticated experimental design of these projects which are part of a "manpower training laboratory," permits a potentially sounder evaluation than others described here.

Finally, there are studies by sociologists which attempt primarily to examine the characteristics of individuals associated with successful or unsuccessful program experiences. These efforts are concerned with program effects and not with program costs. Examples include a study of four Neighborhood Youth Corps projects by Regis Walther of George Washington University, and an examination of a Neighborhood Youth Center conducted by New York University.

With the exception of the Planning Research Corporation work, these studies examine only a single program or project and make no attempt to compare alternatives or judge which type of project or program is more beneficial to a particular group. The data collected generally have significant omissions, and biases appear in the collection process. Most of the analyses are rather primitive, using straight tabular comparisons. Few use regression analysis to attempt to control for the effects of population in determining differences between programs. Control groups are generally missing or inadequate. Most studies have been used to justify specific programs rather than to support the allocation of resources. There has been little

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*Michael E. Borus, "A Benefit-Cost Analysis of the Economic Effectiveness of Retraining the Unemployed," Yale Economic Essays, IV (1964), pp. 371-429.

interaction between evaluators and decisionmakers. The result has been a lack of concern for what decisions the evaluations are designed to support, or what issues they are designed to resolve.

Future evaluation efforts, we feel, should seek to compare alternative means of achieving agency objectives whenever possible. This means that several programs should be examined simultaneously, using consistent assumptions and analytical procedures. Surveys should not be undertaken without a clear plan for analysis. It appears desirable to make the analyst responsible for the collection of data.

For some time into the future, evaluation efforts should be viewed as serving a dual function. They should seek findings related to program decisions; but at the same time they should develop new methodologies, data systems, and criteria for future evaluation. The current methodology is simply not up to the task, and new techniques are unlikely to be developed outside of ongoing evaluation efforts.

DATA SYSTEMS

RAND examined five data-collection systems during the course of its study. These include the Manpower Development and Training Act (MDTA) system, the System Development Corporation (SDC) system, the Community Action Agencies (CAA) system, and the Concentrated Employment (CEP) system. All of these systems fail to provide reliable and unbiased data to support evaluation efforts. A significant problem observed was the lack of follow-up data in all systems except the MDTA system. Even here the response rates are so low that we expect serious biases to enter into the data. But perhaps the most significant failure of these systems is the lack of support given to decisionmakers at the local level. Only the SDC system appears designed to be supportive, but its lack of computerization severely limits its usefulness.

One system we examined <u>did</u> appear to have the potential to support local decisionmaking and -- if widely used in manpower programs -- national evaluative analysis: the "Extension Zero" system developed

by Donald R. Clarke at the East Los Angeles YTEP. (This system of data collection is not operational, because of funding limitations.) Reporting offices would dial telephone extension "zero" and be connected with a clerk who fills out a "mark-sense" (machine readable) card from the information reported. In return, cooperating offices are supplied with frequent computer-printed status reports for use in their own operations; hence, the system is self-motivating. These reports could include status descriptions of enrollees and project; descriptions (trends) of population and placement; and comparative evaluations of individuals, with the net change attributable to the project.

Data collected at each stage of the project are keypunched and retained for future use. Each time a service stops or starts for an individual, a mark-sense card is filled out. This system seems to provide most of the data that a manpower project director would require for day-to-day operations. It records them in a form that allows flexible reporting of any information dealing with the flow of the individual through the project. This system does not provide for follow-up data to determine the status of terminees subsequent to their program experience.

V. RECOMMENDATIONS AND SUGGESTIONS

Some of the recommendations in this section are for immediate and specific action; others are of a more general or methodological nature. Also, we are suggesting two specific demonstration projects. These recommendations have evolved from RAND's first year of work for OEO; hence, they should be regarded as tentative but worth further consideration.

Conduct a Longitudinal Study

The longitudinal study (stimulated by RAND) that OEO and the Department of Labor are planning to undertake can play an important role in the development of evaluation systems -- besides being a significant research and evaluation effort in itself -- but only if the systems developed prove to be useful after the longitudinal study is completed. Among the tasks we would like to see carried out is the development of various proximate measures of program outcome. In addition to the placement rate, the variables considered should include some that more accurately indicate changes in economic welfare, attitudes, motivation, and the like. Such proximate measures could be used by program administrators to evaluate the effectiveness of the various projects making up that program.

Seek Low-cost Sources of Follow-up Data for Evaluation

Surveys of program participants are expensive and probably not feasible as a continuing source of data for evaluation. Other measures, including the use of employer records or of more proximate program criteria such as placement rates, may be potentially useful when a large number of projects are involved. However, these measures have never, to our knowledge, been examined in context with more sophisticated retrospective or longitudinal studies. Again, an effort should be made to identify and calibrate proximate criteria.

One of the more promising data sources uncovered in our work was the employer follow-up survey. Drawing on limited experience, we find the costs of data from this source to be only a tenth of the costs of

interviewing former enrollees. If the results of such surveys can be shown to bear a consistent relationship to more comprehensive measures of program benefits, they offer a useful basis for continuing evaluation efforts.

The use of earnings records existing in the federal system also looks promising for low-cost evaluation in the long run.*

Consider Computer-based Information Systems

Because existing data systems probably cost too much for the results they produce, there is a need to improve them and to design new systems that will provide more relevant, timely, and reliable data. The key to improved information systems lies, in our judgment, in designing systems to facilitate local decisionmaking and in meeting the needs of local projects. We believe that this requires a system that is computer-based from its inception. We also believe that OEO should consider establishing regional computer facilities to support manpower and possibly community action programs. We suggest that this idea be explored by means of a demonstration project (see Demonstration Project A, below) in advance of any implementation on a large scale. If local systems work at the local level, the data can be aggregated for national decisionmaking purposes; if they don't, it is doubtful that useful data will be produced.

Focus Job Development on Promising Firms

Greenberg's study of sixteen firms (RM-5740-OEO) indicates that the characteristics of the firm in which a project graduate or terminee is placed -- such as its unionization -- make a significant difference to his future work experience. This result emphasizes the importance of the job development and placement activity, as well as the importance of keying program activities to meet the needs of the more promising kinds of firms, even at the expense of other activities. Once the most desirable types of firms or industries have been

*Anthony H. Pascal (ed.), Cities in Trouble: An Agenda for Urban Research, RM-5603-RC, August 1968, pp. 63-66.

identified (on the basis either of planning factors developed through analysis or simply of field visits), OEO could examine ways of improving project placement performance with respect to these firms. This suggestion applies both to persons who will receive on-the-job training and to those who have already undergone institutional training. The relative success of particular industries or firms in absorbing trainees should influence the degree to which projects deliberately direct trainees to those industries or firms.

Employer advisory committees, now required by some programs, should be encouraged to give curriculum guidance on prevocational and vocational training programs. Special follow-up activities might be provided to training terminees entering these firms. Such a close working relationship between projects and industry exists now in a few pilot projects, but in general this approach has not been emphasized. It seem particularly timely to examine such potentially important relationships. (See Demonstration Project B, below.)

Develop Standards for Cost-Benefit Studies

It would be desirable to assemble a set of standards for the conduct of cost-benefit, or cost-effectiveness, studies of social action programs. Such standards, like those in the water-resources area, would specify what kinds of effects are to be treated as costs and what kinds as benefits. The cost-benefit studies of social programs conducted to date differ substantially in their treatment of costs and benefits, and as a result are usually noncomparable and provide an inadequate basis for making decisions on program design or funding. Indeed, the very wide divergence in these studies serves to reduce their credibility in the eyes of policymakers.

Examine Youth Program Goals

Our experience with several youth projects in the Los Angeles area and our examination of evaluations of youth programs nationally lead us to doubt that immediate post-program employment experience should be the sole measurement of project outcome. Since this is a

stated objective of some youth programs, notably the Job Corps, and since it may be an unrealistic goal for certain parts of the youth population, notably 16- and 17-year-olds, it may have led not only to improper evaluations buy also to improperly structured programs.

RAND is attempting to define a proper research program for studying urban youth and urban labor markets, and will make recommendations designed to clarify other possible goals (long-term earnings and employment, social integration, and so on) for these kinds of programs. Meanwhile, we suggest that alternative types of youth programs with explicit goals other than immediate employment be examined.

Make a Pilot Study of Program Images

Youth training projects can develop bad images in industry and within the community, inhibiting the projects usefulness in training and placement. Greenberg came across a number of cases where employers expressed a disinclination to hire graduates of these federal training programs. A pilot study of the public images of these programs within the community should help OEO's understanding of why such adverse views arise, the extent to which they appear to influence and be influenced by results, and how they can be changed. Again, programs attractive to the hiring firms may contain lessons that ought to be communicated.

Understand the Decision Supported by an Evaluation

An evaluation should be undertaken with a clear understanding of the decision to be supported by that evaluation. If the decision lies in a choice between alternative projects or programs, then the alternatives should be evaluated simultaneously by the same analytic methods, criteria, and controls.

Recognize the Limitations of Data Currently Available

It should be recognized that data drawn from existing manpower project records are of relatively little use in evaluating project outcomes, judged against the costs of service rendered. These data are of use in determining gross characteristics of the populations

being reached, and thus in determining whether some part of the target population has been reached.

Make More Use of Multivariate Analysis

Some form of multivariate analysis, such as the one used in our two empirical studies, is an important tool in program evaluation. Multivariate problems should be attacked with multivariate techniques.

Study the Control Group Problem

We have found no good solution for the control group problem. Any field where the populations entering or receiving treatment have some role in choosing whether to receive treatment presents difficulties with control groups. One might conduct social experiments in which people are arbitrarily denied the opportunity to enter a project -- in the interest of learning the value of various project treatments -- but this is probably not a feasible approach. The concept of placebo treatments, often an element in the design of experiments, likewise does not seem feasible for manpower projects.

It may be more productive to seek out measures of motivation, attitudes, and knowledge that would allow the appropriate control for differences now unmeasurable. This effort would require basic research activity of the sort initiated by Ralph Underhill.*

Distinguish Between Program Effects and Population Effects

In looking at the outcomes of studies conducted to date, it is difficult to distinguish between program effects and population effects, the latter being population characteristics that influence experimental outcome. It is important to attempt to control for population variations. One way is to use multivariate techniques to control simultaneously for differences in demographic and attitudinal

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*See his Youth in Poor Neighborhoods, a pilot study for the Office of Economic Opportunity.

factors. It is also possible to divide the populations being served into separate, relatively homogeneous subgroups and pose the question of how effectively the program deals with the problems of these subgroups.

Establish a Procedure for Program Development

The introduction of new manpower programs has tended to be rushed, to be based upon insufficiently tested concepts, and to lack coordination with existing training efforts. We suggest that a more formalized procedure for new program development be established. The first steps, if required, should be a group of demonstration or experimental projects that have as their objective the examination of a variety of alternative treatments, sponsoring institutions, and program philosophies. Data from these demonstration projects should help in the refinement of program guidelines and the development of techniques for training program personnel.*

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SUGGESTED DEMONSTRATION PROJECTS

Project A: A Computer-based Data System

We feel that a reactive data system of the sort described at the end of Section IV should be supported for further development. This system, which exists in rudimentary form at the East Los Angeles Youth Training Employment Project under the name "extension zero," was given

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*Although we are not familiar with the details, the "Follow Through" project directed by the Office of Education appears to be an attempt to achieve rational program development.

programming support by RAND in the hope that this would make enrollee data more readily available. The system was brought almost to operational readiness, but time did not permit its use for trial evaluations.

We recommend two steps: (1) bringing the system into full operation with additional programming, debugging, and trial runs as required; and (2) supporting the East Los Angeles YTEP, and at least one other project from a separate computer facility, to test the concept of a manpower data center. The system could also be tried as part of Demonstration Project B, below.

Project B: An Experimental Manpower Project

The objective of our study was evaluation, but some of us inevitably began to wonder what a really effective manpower project would be like. The best mix of services and the best approaches to enrollees would, of course, be determined rigorously during a longitudinal study, if one were undertaken. Nevertheless, those of us who visited manpower projects during the course of the study came away with a composite impression of certain major project defects (based on our total experience, not any specific project): a bureaucratic atmosphere characterized by uncertain funding and by in-fighting on the staff; lack of emphasis on job placement (at least in the eyes of enrollees, mainly interested in getting a job now); half-hearted attempts to comply with recordkeeping and reporting requirements; classroom training for jobs no longer in demand; obsolete training equipment; and minimal participation by employers, and by former enrollees who had made good.

In addition, we came away persuaded that our neighborhood research team had become more than a survey activity -- that it had also become a motivational and training activity, a manpower project in itself. The young members of the team developed a fine spirit -- probably because they had firm but sympathetic supervision -- and discussed their problems in group sessions. They assisted in locating former training-program enrollees (often a thankless task). Several

of the interviewers decided to finish school and prepare themselves for a career in social work. Some others obtained jobs with the Bureau of the Census as a result of their experience. Their interest was presumably heightened by the fact that they saw themselves doing something constructive in their own community.

Combining what we learned from this survey experience with impressions of project image, the need for involvement and interaction, and the need for good data (on the job market and on enrollees, including their subsequent work experience), we propose an experimental manpower project with the following characteristics:

1. The project would have an informal atmosphere and be oriented toward immediate placement for those who were ready.

2. The largest possible list of openings with cooperative firms in an accessible area would be developed and kept current by means of a sophisticated data-processing and display system.

3. As required, persons seeking jobs would be referred to basic-skill or vocational training, but on-the-job training would be encouraged and preferred. Training would be conducted away from the project center so as to minimize the school image.

4. All enrollees would be followed through and beyond the project by means of a computer-based data system.

5. Counseling would be professional but conducted in low key, with emphasis on group sessions. It would be desirable to encourage participation in these sessions by employer representatives, former enrollees who had been successfully employed, and potential enrollees.

6. Financing could be indirect, perhaps through subsidies to participating employers who would jointly sponsor the project.

Appendix

UNIT COSTS OF A MANPOWER PROJECT

Certain records were not available and others were not maintained in a form usable for the study reported here; therefore, it was necessary to make numerous assumptions and estimates. The results given in Table 1 should be treated as rough approximations only.

"Student Hours" and "Placements" were selected as units of cost because they are measurable activities. There was no way to measure the effort expended on certain key activities such as recruiting and counseling, in which virtually every member of the staff participated in some degree. Also, some activities could not be attributed to any particular staff element. For these reasons, the cost measurement units in Table 1 cannot be combined to represent the total activity. Despite this handicap, the data may give some notion, heretofore lacking, of how the budget is used by the several activities and with what results.

Although Owens and Soderberg, who prepared this data, had no basis for rigorous comparison, they felt that the costs per unit were as low as could be expected in view of the backgrounds of the youth being served and the dislocations caused by piecemeal, last-minute funding.

Table 1

SUMMARY OF UNIT COST ESTIMATES FOR SELECTED MANPOWER-PROJECT ACTIVITIES

Activity	Output Measure	Number of Units	Unit Costs (dollars) Departmental[a]	Unit Costs (dollars) Total[b]
YTEP				
Basic skills training	Student hour	93,609	2.58	4.15
Prevocational training	Student hour	79,450	1.59	2.18
Vocational training[c]				
Placement function	Placement	134	707.10	--
Training courses:				
Beauty operator	Student hour	14,822	0.65	1.67
PBX-receptionist	Student hour	2,976	0.65	3.94
Medical assistant	Student hour	12,552	0.65	2.21
TV-radio repair	Student hour	5,286	0.65	2.56
Nurse's aide	Student hour	1,856	0.65	3.38
Upholsterer	Student hour	360	0.65	5.05
Welding	Student hour	4,963	0.65	2.79
ADP console operator	Student hour	98	0.65	3.53
Automobile mechanic	Student hour	14,701	0.65	2.89
Barber	Student hour	16,710	0.65	1.76
Machine operator	Student hour	3,378	0.65	3.24
Stenographer	Student hour	6,004	0.65	2.61
Cosmetologist	Student hour	9,530	0.65	1.76
Computer operator	Student hour	143	0.65	7.63
Dental assistant	Student hour	5,461	0.65	2.79
Vocational nurse	Student hour	1,926	0.65	2.17
Refrigerator mechanic	Student hour	726	0.65	2.98
Keypunch operator	Student hour	664	0.65	2.97
Clerk-typist	Student hour	46,205	0.65	1.44
Job development:	Placement	669	138.87	--
Counseling-testing	Screening interview	1,679	5.34	6.86
	Test	1,247	7.20	9.23
	In-take interview	1,628	16.54	21.21
	Average active case load	1,030	130.68	167.66
On-the-job training	Placement	144	385.19	643.07
	OJT day	7,633	7.35	12.27
NYC-ELA	Placement	621	147.38	827.49
NYC-CEP	Employee hour	11,345	1.22	2.74
Job Corps	Placement	214	85.63	101.19[d]

[a] Includes allocated share of YTEP administrative and supporting services costs.
[b] Includes allowances/wages paid to enrollees. (Not applicable to job development.)
[c] Includes some CY-1966 training. All other activities are for CY-1967.
[d] Job Corps Center costs not considered in this study.